

CLAIM AMENDMENTS

1. (Original) A system for automatically controlling the build-up of material on a substrate, comprising:

a controllable semiconductor diode laser having a beam directed to a localized region of the substrate so as to form a melt pool thereon;

a material feeder for feeding material into the melt pool to be melted by the beam to create a deposit having a physical attribute;

an optoelectric sensor operative to output an electrical signal as a function of the physical attribute; and

a feedback controller operative to automatically adjust the rate of material deposition as a function of the electric signal

2. (New) The system of claim 1, wherein the feedback controller is operative to adjust the rate of material deposition by modulating the laser to control the power of the beam.

3. (New) The system of claim 2, wherein the modulation of the laser is in the kilohertz range.

4. (New) The system of claim 2, wherein the modulation of the laser is up to 20 kHz.

5. (New) A method of depositing material on a substrate, comprising the steps of:

heating the substrate with a high-power, rapid-response diode laser to create a melt pool in a laser interaction zone;

feeding material into the melt pool to create a deposit having a physical dimension;

monitoring the laser interaction zone to generate an optical signal indicative of the physical dimension; and

controlling the deposition using the optical signal.

6. (New) The method of claim 5, wherein the deposition is controlled by modulating the laser.

7. (New) The method of claim 6, wherein the modulation of the laser is in the kilohertz range.

8. (New) The method of claim 6, wherein the modulation of the laser is up to 20 kHz.